STATE OF IOWA

THOMAS J. VILSACK, GOVERNOR
SALLY J. PEDERSON, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
JEFFERY R. VONK, DIRECTOR

30 April 2004

Program Assessment Team
Pat Heglund, Marvin Hubbell, Rick Frietsche
USGS-UMESC
2630 Fanta Reed Road
La Crosse, WI 54601
gs-b-umesc_pat@usgs.gov

Dear Team Members,

We want to thank you for your efforts to document partner expectations, priorities and visions of the future of the Long Term Resource Monitoring Program (LTRMP). It was also very helpful that your team was able to meet with us and assist in completing the survey. Please find attached our completed survey responses. Our responses are in blue, immediately following each question. The program continually needs to be evaluated to ensure that the program is efficient, focused and valuable to the partners and the management needs of the Upper Mississippi River. The Iowa Department of Natural Resources has been a long time supporter, partner, and user of the Long Term Resource Monitoring Program and believes the program is *the* leader in large river science and monitoring in the world.

All of the program partners are faced with difficult funding scenarios and the LTMRP is no different. Since its inception, the EMP has been continually under funded. The ultimate goal is a cost indexed program with a stable funding base. We need to be proactive and continue to strive for Congressional funding that would provide for inflation and other program necessities.

The Iowa Department of Natural Resources believes that uninterrupted data collection by LTRM field stations is the highest priority and most essential product of the LTRMP program. This data collection is essential for all goals and objectives of the LTRMP Operating plan. Frankly stated, without the monitoring data stream, there is no LTRMP.

The Iowa Department of Natural Resources offers these suggestions regarding the future of the program.

1. This is a Long-Term monitoring program. The continuation of data collection/monitoring using the six, field station structure with emphasis on monitoring fisheries, water quality, vegetation, macroinvertebrates at the FY 2002 level of effort (or greater if funding allows) is a priority.
2. Continue the excellent system developed by UMESC to support the management, distribution, analysis, and accessibility of the LTRMP data including the enhanced web data browser and geo-spatial and decision support tools.
3. The field stations should be used to the programs advantage for annual and long-term, focused and systemic component data analysis.
4. All program partners should be required to provide an itemized budget with personnel time allocations similar to what the states submit to USGS-UMESC.

5. Investigate alternatives for a more efficient and effective management structure for the oversight of the EMP program.

Again, thank you for the opportunity to complete the LTRMP 2004 Partner Survey. This survey is definitely a worthwhile tool to help identify the critical needs of the program. All programs must go through evaluations such as these and this one will help to make the LTRMP a better program. We strongly believe the partnership must continue to strive for a better funding base concurrent with actions to restructure the existing program. We look forward to meeting with you and your staff to discuss the future of this program at the next EMPCC meeting.

Sincerely,

Diane Ford-Shivvers
Iowa EMPCC Representative
Iowa Department of Natural Resources
502 East 9th Street
Des Moines, Iowa 50319-0034
Diane.Ford-Shivvers@dnr.state.ia.us

2004 Partner Survey

Please answer the following questions as completely as possible. Where appropriate, please provide your reasons for your answer. Our cover letter outlines the funding scenario under which these questions are framed: a flat $5 million budget for the next 5 years with reduced operational funds through time as inflation, increased staffing costs, and increased saving and slippage evolve. Please return your response to the Program Assessment Team, USGS-UMESC, 2630 Fanta Reed Road, La Crosse, WI 54601 (gs-b-umesc_pat@usgs.gov) no later than April 30, 2004.

The following questions relate to the program goals and objectives as stated in the Operating Plan (U.S. Fish and Wildlife Service 1993) and how the program has been implemented to date. Refer to Tables 1-4 as you answer the questions.

Review of program goals and programmatic emphases.

I. Goal 1. Develop a better understanding of the ecology of the UMRS and its resource problems. ***"Informed Upper Mississippi River System management requires an improved understanding of the ecosystem and its resource problems….Data collected in the trend analysis element of the Program (Goal 2) will be used to make correlative relationships with the resource problems. To the extent that problem analysis can determine cause-and-effect relationships, problem analysis also will play a role in the design and evaluation of [HREPS], and the development of management objectives (Goal 3)…."***

Conceptual models have been developed for individual resource components but little has been done to tie these components together as called for the 1993 Operating Plan. The original program design included analysis of data collected from a wide spectrum of components to develop a better understanding of relationships between and among them and most critically, to support the objectives of Goal 3. Over the past 10 years LTRMP has been gathering information from 6 pools that provide a systemic view of the UMRS. We now have the data available to begin understanding drivers of the system and how resources are distributed in space and time if staff were directed to conduct additional analyses.

I – 1. Is this still a critical goal to address for the Upper Mississippi River System?
Yes, cause and effect relationships are an important part of understanding any system and how it works. The UMR is dynamic and continually changing. It has been suggested that the data will tell you when you have sampled enough. Most biologist/researchers suspect that 10 yrs is not enough to let trends develop fully. The longer the data string, the more valuable it becomes. This is especially important due to the increasing number of exotic species that has been showing up in the UMR.
I –2. Should LTRMP place more emphasis on this goal in the future?
Yes, more emphasis should be placed on this goal now, and in the future. The program has identified some of the resource problems and can now explore the mechanisms. It is critical to resource management to know what is influencing the system and how the components function together. It is important to continue the data collection to test the models. The program cannot have a strong goal 1 unless we continue to have a strong goal 2. The LTMRP staff, who are by far the most familiar with the data and programs, are best able to achieve this goal.

I –3. If your answer to I – 1 is yes, but your answer to I – 2 was no, do you have recommendations on how this goal should be addressed outside of the context of LTRMP? If so, what are they?

N/A

I – 4. If you agree LTRMP should place more emphasis on this goal, what changes would you make to the Program so that progress could be made toward this goal?

Ensure that the UMESC Component PI's are working on these goals of LTRMP as opposed to projects funded outside of LTRMP. UMESC staff allocated to LTRMP should work 100% of their LTRMP time allocation on LTMRP work. A group of LTRMP staff (the component PIs and/or field station staff) could be devoted specifically to the task of identifying and understanding the linkages between the LTRMP study components between field seasons. Changes made to the program have already impacted this goal. Stability to the components and data collection are imperative to making correlative relationships with resource problems. This question assumes that *change* is needed to reach the goal. We don't see change, but rather time, as the critical element. Ecological relationships tend to be more complex than population or community relationships and trends. Continuing to monitor critical components of the ecosystem (e.g., wq, fish, veg, inverts) will allow for further observational investigations that are likely to facilitate hypothesis generation with respect to UMRS ecology. Coupled with focused research/hypothesis testing, monitoring community and population patterns should lead to goal 1.

I – 5. What sort of understanding among the ecological elements (i.e., water quality, sedimentation, fisheries, aquatic vegetation, land cover, bathymetry, invertebrates, etc.) would you hope to gain from more emphasis on this goal?

We would hope to gain a better understanding among all of the ecological elements listed above including impacts of invasive species. Understanding long-term trends among the ecological elements is critical to the process. Knowledge gained from more emphasis on this goal would be more than just a "beginning" of understanding the drivers of the system. We would know what happens to a large river ecosystem both systemically and/or longitudinally and laterally after a major flood or drought, impacts of exotic species, their immediate or delayed affects. Speculation is not needed if the data are available.

The ultimate goal is to understand how all the elements relate to one another and the quantification of the relative importance of each element to each of the other elements (a UMRS ecological spider web). A change in one ecological element is likely to cause a change in another. A better understanding will allow us to manage the system more effectively for the benefit of the ecosystem. The program is just beginning to establish reference or benchmark criteria of the ecological elements for objectively and consistently assessing the ecological health of the UMRS. Use of data by managers is hindered without these benchmarks or criteria.

II. Goal 2. Monitor resource change. ***"Informed Upper Mississippi River System management requires an improved understanding of the ecosystem and of long-term resource trends and condition. A primary goal….is to monitor and evaluate long-term changes…"***

The structure of the monitoring program has been in place for more than ten years. Monitoring and evaluating long-term changes or trends in selected physical, chemical, and biological components is considered essential to an improved understanding and management of the river.

II – 1. We now have 10 years of data and an understanding of what changes in the selected components can be measured with some level of confidence. Is the current emphasis on this goal still a priority for you? Please explain why.

Yes. The river is dynamic and variable. The program may not have captured the full range of variability. Long-term data is needed to evaluate trends in the system because 10 years of data is not a long-term dataset. A much greater level of understanding comes with 20-30 years. Many more years of data are needed to fully understand the system. This goal is *the* primary element and a priority of the LTRMP. It is important for our agency because it allows us to "stay on top" of the resource and provides current and "real-time" information about the UMR. It should remain a priority because it provides an important service to river managers and the general public. Long-term trends are the backbone of the program. If changed it will erode our ability to find out "why" and "what", and is there something we could do to change this? The failure to identify and report on trends leaves the status of the UMR open to selective interpretations; for example: one group feels that the river's water quality (chemical or biological) is far better today than during the past; another group feels that water quality of the UMR has never been worse and is getting worse still; another group feels that water quality of the UMR is probably adequate but they lack the information necessary to make any statements about trends in water quality of the river. Depending on the respective resources and agendas of the groups involved, these selective interpretations sometimes lead to a focus- and a commitment of the state and federal resources-to perceived problems that may or may not exist. This focus on what a special-interest group decides is the issue-de-jour does not appear to be a wise use of limited state/federal resources.

II – 2. Is timely detection and "red flagging" of significant changes in trends important?

Yes, timely detection and "red flagging" of significant changes in trends are important because it signifies some sort of change is happening. Red flagging and detection of significant changes will help provide the necessary knowledge with which to make informed resource management decisions. Management decisions can only be made if they can be supported by the best information available. If LTRMP cannot detect, and resource managers cannot react to significant environmental changes, the UMR ecological quality will decline. The distinction between "trend" and "change" is important here. Trends typically reflect broad-scale activities; "changes" reflect more immediate activities. For example, the banning of PCBs in the 1970s set in motion a national trend of lowered levels of PCBs in fish tissue (a "trend"). The identification and removal of sources of PCBs from the ALCOA-Davenport plant to Pool 15 of the UMR, however, resulted in significant lowering of PCBs in Pool 15 fish over a few years (a "change"). Changes are relatively easy to identify; trends are more subtle and difficult to demonstrate. The design of the LTMRP is geared to broad-scale description of the UMRS over the long-term. If LTRMP data show an adverse trend in, for example, levels of dissolved oxygen in the UMR, the levels of lowered dissolved oxygen would have been likely occurring for several years before sufficient data would exist to demonstrate the adverse trend. Timely detection and "red flagging" of significant changes in trends is most likely to be accomplished at the field stations, rather than at UMESC, and should continue.

II – 3. If yes, how do you suggest we balance the need for data collection with the need for timely analysis with limited funds?

The balance is already there. The majority of the data is collected in the summer and fall. Timely analysis of the data can be completed in the winter and spring. The data QA/QC has been reduced to a few weeks, or less due to electronic data entry and the computer programming in place. Automated analysis created in FY03 allows for easily adding one more year of data to the routine. Due to more efficient data collection and QA/QC, more intensive data analysis can now be a priority and it can be completed inexpensively at the field stations. We have 10 years of data to analyze, so hopefully we can determine the most essential data and the most essential data analysis.
Another measure that may attempt to balance the need for data collection with the need for timely analysis would be to identify the most responsive and ecologically sensitive trend indicators and habitats. Eliminate those providing little trend information value. Concentrate reporting on indices, or other standard quantitative reporting instruments that are the most easily generated.
The LTRMP is a broad-scale program with a long-term focus toward ecological understanding and identification of trends (versus "changes"). Thus, we don't see "timeliness" of the analysis as a crucial issue. But, we do see the need to provide for the regular analysis of the data collected by the LTRMP. Collection of environmental data without analysis is the classic failure of many monitoring programs.
You cannot balance the program needs if you buy into the present concept of limited or declining funding. The only long-term scenario for the program to continue and succeed is to regain a needed level of commitment; that is commitment from all partner agencies and commitment from the funding source (COE and Congress).

Selecting the initial monitoring pools was a cooperative effort resulting in six study reaches and associated field station infrastructure. The monitoring reaches (Pools 4, 8, 13, 26, Open River reach of the Mississippi River and the La Grange Pool of the Illinois River) were selected to provide a system view of the river based on reach-wide estimates of selected resource trends and physical condition of the river floodplain. Thus we have good information for some locations on the river but little information, other than bathymetry and land-use/land-cover, collected for other areas.

II – 4. Is the current emphasis on the focused reach approach still a priority for you? If so, why?
Yes, the current emphasis on the focused reach approach is still a priority for us. It is far from ideal, but funding, sampling logistics and the complexity of the UMR system does not allow may other options. These data will represent the "baseline" for all future data comparisons in those specific reaches. If funding is going to be a problem, we at least need to continue to sample with the focused reach approach and we most likely won't be expanding efforts to other pools. The focused reach approach provides the partners with data that is comparable now and in the future especially for long-term. Is it more important to learn a lot about a small area such as the 6 reaches or is it important to spread the effort out and learn a little about a large area? If the program is set up correctly, and we believe that it is, good research and monitoring from specific reaches can be applied to the system.
If the focus of LTRMP is to provide a system-wide view, then the selection of representative pools for monitoring makes sense. One suggestion, however, is that the LTRMP design needs to include a study pool representative of the UMR between Pools 13 and 26 if more funding

was available. The river in this reach is different than the river at Bellevue or St. Louis, and any system-wide characterizations based only on data from the current six study reaches will likely have little relevance to this reach of river.

II – 5. Do you use information from all of these pools or just a select few? If so, from which pools and what data are used? How are the data used?

We have used information from all components and from all pools, but primarily use information from the three upper pools. Data are typically used to provide status, trend and baseline information to resource managers.

The data is used for several tasks such as; determine need, design and evaluate HREPs; review permits; set and evaluate fish and wildlife regulation changes; determine and evaluate dredge material management plan (DMMP) sites; ten-year synthesis; specific questions that revolve around the creation of a baseline or trend for comparison purposes; water level management; to track the spread of invasive species; track long-term systemic changes; biological and ecological responses to environmental perturbations that might also occur in other aquatic systems (e.g., tributary streams); for the purposes of Clean Water Act (305(b)/303(d)) reporting for the state of Iowa, LTRMP data from fixed sites on Iowa tributaries to the UMR; the LTRMP query tool has been used to assist in data analysis and to help identify river stations that demonstrate water quality problems.

We now have a better understanding of the variability in resource components that are being monitored. We know that for several of the resource components that trends are similar among pools 4, 8, and 13 and similar among Pools 26, Open River and La Grange and that the two sets of pools (upper vs lower pools) are *different* from each other (e.g. Lubinski report).

II – 6. Is the spatial distribution (the 6 pools) of data collection useful to your organization?

Yes the spatial distribution (the 6 pools) of data collection is useful to our organization to understand the ecology of the UMR and identify long-term trends, but a study pool between pools 13 and 26 is needed to characterize that reach of river and would help to quantify the "transitions" between the upper and lower reaches. Even though the groups of pools are similar to each other in a broad sense, they are different on other scales. (Are walleyes similar to sauger? Yes. Are they different? Yes.)

II – 7. If yes, would you maintain the same level and scope of data collection in all of these pools? What would you change in light of decreased funding?

We want to maintain the same level and scope of data collection in all of these pools. The goal should be to stabilize and add more funding. We are not willing to reduce the level and scope of data collection unless a restructure of UMESC would be possible.

The criteria used to select the 6 trend pools had a long and valid history. Simply, the value of collecting data in 6 pools may be comparable to having a wheel with 6 spokes. Reduce the number of spokes and you reduce the value and usefulness of the "wheel" or dataset.

If full funding (or near full funding) of the program cannot be maintained, the utility of the entire program is in doubt. That is, if the goal of the LTRMP is an understanding of the ecology of the UMR system, eliminating or reducing effort in select areas will effectively defeat the program's goals. If cuts need to be made, we suggest dropping the systemic coverages of LC/LU and bathymetry.

II – 8. If your response to II –6 is no, would you support monitoring efforts in other areas of the UMRS with the understanding that this change would be offset with a smaller investment in monitoring in pools 4, 8, and 13 and/or in Pools 26, Open River, and La Grange?
N/A.
II – 9. Where along the river would you like to see more monitoring? What components would you monitor? What would you trade off or how would you justify this need in the budget process.
Recognizing that this might present logistical challenges in light of the investment in the existing monitoring stations, we could consider expansion to unmonitored segments of the river, particularly when the comments above indicate there is a shift in resource characteristics from upper pools to lower pools. It would be natural to focus on the river segments between the upper and lower pools between pools 13 and 26, *but not at the expense of the current LTRMP study areas and protocols*. If the current monitoring approach is seen as adequate to meet the goals of the LTRMP, then we do not suggest addition or removal of study components. Monitoring should be comprised of the same sets of components and parameters sampled elsewhere in the program. This need to sample elsewhere would be very difficult to justify under the budget scenario this survey is based upon although there would be a possibility of working with the University of Iowa research facility in Fairport, IA.

Sampling effort within a year and across years necessarily differs for each component (See Table 2). Under reduced funds, sampling efforts will in all likelihood need reduction.

II – 10. Is the temporal distribution of data collection useful to your organization?
Yes, it is important to see changes over time and annual variation in populations is important in the recruitment and survival of those organisms. The temporal distribution of data collection is useful to achieving the goals of the LTRMP and because it is useful, there is a need to be consistent and continue at the same temporal distribution although analysis has shown that certain parameters, such as tributary water quality, should be sampled on a more frequent basis.
II – 11. Could you get by with a lower sampling effort? What could be reduced and how?
No. We are at the lowest effort possible because of past program reductions and it seems unlikely that effort reduction would be desirable in any way. The partnership has already given serious thought to this question, and implemented a program reduction effort that may already be compromising the dataset.
II – 12. If no, how would you maintain or increase the sampling effort? What would you be willing to reduce from the overall program to accomplish this goal?
Stabilize and add more funding would be the best strategy to accomplish this goal. We are not willing to reduce sampling effort unless a restructure of UMESC would be possible. The focus should continue to be the baseline monitoring at the six study reaches. In order to maintain sampling effort in we would suggest a restructure of UMESC management in order to reduce costs there, then reducing LC/LU and bathymetry.

Bathymetric mapping, hydrological summaries, and sedimentation studies have been eliminated due to funding constraints. ***These elements, as planned components of the annual Scope of Work, were eliminated in FY 2000 by agreement among the partners because they could be accomplished with year-end funding if savings and slippage monies became available. Monies through savings and slippage avenues have become increasingly rare. In addition, new federal business practices make such year-end fund distributions difficult.***

II – 13. Are the program components listed above reasonable elements for monitoring systemic change and of use to you? Should the monitoring of some of some or all of these components be included in a fund-limited LTRMP? Which ones and where would you sample?
The program components listed above are reasonable elements for monitoring systemic change and are of use to us, *but the annual long-term data collection and interpretation that helps provide ecological understanding and is the "backbone" of the LTRMP is more important*.
Monitoring some or all of these components could be included in a fund limited LTRMP and we would sample the key pools first, then fill in remaining pools as funding allows. Baseline monitoring remains the first priority then complete bathymetry, which should become less expensive due to changes in technology and cooperation with the COE.
Studies on bathymetry, hydrology, and sedimentation are very important. An understanding of how these elements are related, and how they will change given the different scenarios for the future of the UMRS, are needed to make other data collected by LTRMP (e.g., on fish, aquatic macro-inverts, and aquatic vegetation) useful.
II – 14. What other physical, chemical, or biological components would you like to see monitored? Where and how often would you sample them?
No additional physical, chemical, or biological components should be monitored under the funding scenario of $5M. If funding is increased beyond the needed base, components and sites may be added as funding will allow. Increase the frequency of water quality at major tributaries; the addition of parameters useful to Clean Water Act reporting such as agricultural pesticides, indicator bacteria, toxic metals; exotics (i.e., zebra mussels, Asian carp, round goby, etc.); mussel, bird, amphibian, reptile, and terrestrial/semi-aquatic floodplain vegetation components would greatly add to the knowledge base. The LTRMP, however, is currently a well-designed program; the addition or subtraction of program elements should be less important than maintaining the program as designed.
II – 15. How would the information gathered from monitoring these additional components be used and why is it important?
The information on the current components would be gathered like it is now and possibly more frequently. Inputs from the tributaries make up the water quality in the UMRS and a lot of inputs are missed with the current reduced sampling regime.
The information gathered from monitoring additional components would be used to help us reach Goal 1, plan effective HREPs, determine long-term trends, analyze system functions, document invasive species impacts, help us understand the system and allow us to better manage the system. If the LTRMP generated data on agricultural pesticides, indicator bacteria, and/or metals, these data could be used by the states to improve water quality assessments of the UMR as required by Sections 305(b) and 303(d) of the federal Clean Water Act. These data could be used, for example, to assess the degree to which the UMR supports state-designated uses of drinking water, and primary contact recreation.
II – 16. What would you change in the current program to accommodate monitoring of additional components or to accommodate bringing back one or more of the components listed above that have been eliminated?

The program has restructured and cut as much sampling as they possibly can while keeping a semblance of data still going. We believe that UMESC may have opportunities to reduce costs in order to continue monitoring at the FY02 level or above. Federal costs are typically higher

than what the states are, which would result in savings when combining positions and duties or eliminating positions as vacancies arise. A possible re-organization of the management structure would result in cost savings by reducing the number of upper management that spend time on the LTRM program.

Land cover/land use has been a component of this goal and systemic coverages are collected and interpreted now about every 5 years. ***Modifications to this component were initiated in FY 2000 resulting in cost reductions of > 60% and a cut in project completion time of 50% to <5 years under annual historical funding levels. A system coverage cost is now a total of ~$1.5 million to acquire and interpret.***

II – 17. Is this information important to your agency? If so, how are you using the data?
Yes this information is important to our agency. The data are used to determine (annual) changes in LC/LU, which affect terrestrial and aquatic fauna, for monitoring sample site selection, HREP planning, habitat management, pool plans, permit review and species distribution GIS information.
II – 18. Does the new timeline and level of photo interpretation and analysis meet your needs? Why?
The timeline of systemic overages collected and interpreted every five years would meet some of our needs such as detecting gross changes in the vegetation. More detailed analysis would require more frequent coverage (annual). A complete set of LC/LU for the UMRS would be helpful. Coverage on a five-year basis is great, but a reduced frequency of LC/LU would meet our needs because data collection and interpretation is still our priority. The need is on a site-specific basis and the managers could tell you where we need it. It would be a cost savings if we collect and interpret photos that are needed.
II – 19. What changes, if any, would you make to improve the value of this coverage for your agency and how would this component fit into your overall priority for the LTRMP?
We believe that Larry Robinson and UMESC continue to do an excellent job managing the LC/LU component. UMESC has become a national leader in this field. Any changes to this component would be minimal and merely suggestions. Take the photos, let the partnership determine the annual interpretation needs and archive the others until additional funds are available for interpretation. Agencies outside of the LTRMP partnership use this data as much as the LTRMP partners do, there is no reason they could not cost share in the LC/LU. Although monitoring data collection and interpretation is still our first priority, LC/LU needs to be continued when funding allows.
II – 20. Would systemic coverage gathered and interpreted at less frequent intervals still meet your needs?
Yes, see above.

III. Goal 3. Develop alternatives to better manage the UMRS. ***"Goal 3 outlines the mission of the Long Term Resource Monitoring program to provide decision makers with information to maintain the..UMRS..as a viable large river ecosystem given its multiple-use character.. ..Work in Goal 3 will include formulation and evaluation of resource management alternatives…an increasing amount of effort and funding will be allocated to Goal 3 as the Program matures…."***

LTRMP has not invested significantly in goal 3 because of the need for the program to mature, although numerous decision support tools to support management have been developed.

Objectives for this goal are to develop *and suggest* management alternatives for river managers.

III – 1. Has the program matured to the point where increased emphasis can or should be placed on Goal 3? Explain your answer.
No, because the program hasn't matured enough yet in the area of data analysis. Additional analyses are needed in order to develop management alternatives. Funding is limited and baseline monitoring is still our priority.
III – 2. If yes, Should Goal 3 objectives be a priority within the $5 million planning LTRMP under discussion.
No because the baseline monitoring is still the most important feature of LTRMP.
III – 3. If yes, what would you change in the current program? If no, how would you recommend the partnership accomplish this goal?
Wait for necessary funding to accomplish this goal. We need to better identify management goals and problems (talk to the managers), so we can make the best use of this expensive proposition. More emphasis on data synthesis and modeling is needed to connect specific alternative management options with varying resource states (conditions).

LTRMP has provided basic analysis and reporting of the data through Annual Reports and Summaries. More sophisticated analyses are now possible after ten years of data collection that support both Goal 1 and Goal 3.

III – 4. In 2003 there was a greater emphasis on data analysis over the 10 year period and in analyses that explored relations among components. Is the timely and complete analysis that goes beyond simple reporting of annual changes important for the development of management alternatives? Would you like to see this effort continue? What would you change in the program to support this increased effort?
Yes, timely and complete analysis that goes beyond simple reporting of annual changes are important for development of management alternatives (development of management alternative is only one reason that timely and complete analysis that goes beyond simple reporting of annual changes is important) and our agency would like to see that effort continued. Time is already built into our schedules to manage this effort. The simple reporting of annual changes and annual report summaries are pretty much canned and can be completed quickly and efficiently including the web based reports as long as formats are not changed over and over as has occurred in the past. The field stations and the PI's should conduct analysis as long as they are dedicated to LTRMP. The analyses should be management and peer reviewed journal oriented. Improved communication between managers and LTRMP would allow analyses to be focused into key issues. This emphasis on timely and complete analysis that goes beyond simple reporting of annual changes was more usable than annual normal reports. Annual reports usually document the "noise" in the system. Long-term trend analysis allows us to report the trends and make inferences to what is really happening. Our priority is to continue the baseline monitoring, and ensuring that those with time allocated to LTRMP are spending all of the time allocated to LTRMP on LTRMP will allow the program to support this increased effort.

One of Goal 3's objectives is to formulate a variety of management alternatives, including those based on single and multiple management measures and HREPs and to test and assess the effectiveness of management prototypes in the field, laboratory and via computer simulations.

III – 5. Is it important to develop and test management alternatives such as HREP projects?
Yes, it is important to develop and test management alternative such as HREP projects but these alternatives would not be able to be tested if the LTRMP data to support them weren't available. Alternatives need to be evaluated or you won't know if they are effective or not, and it will require coordination with the management agencies.
III – 6. If yes, what would you change in the current program to accommodate investigations of HREP's?
Nothing in the current program needs to be changed to accommodate investigations of HREPs. Monitoring of HREP's is already a part of the HREP process and should continue to be funded with HREP dollars and by the sponsoring agencies. Changing the current program to accommodate investigations of HREPs would compromise the existing data collection, which is not a direction we want to go.
Many of the questions surrounding HREPs (e.g., success, bio-response, longevity) require a more focused research approach. This would be expensive, and due to the diversity in HREPs and the questions surrounding HREPs, investigations would most likely be on a case-by-case basis. HREP investigations may require outside funding if the HREP program cannot afford them. Be careful to balance focus on HREP's with attention to identification and solution of problems that are system based. Focus on localized, symptomatic problems and local solutions should not be overly dominant among priorities.
III – 7. If no, how would you envision such work could be accomplished outside of LTRMP funding?
COE and sponsoring agencies should investigate and evaluate HREP effectiveness as they have in the past.

Questions III-5 through III-7 focus on HREPs. What about formulating management alternatives that include those based on single and multiple management measures or testing and assessing the effectiveness of management prototypes in the field, laboratory, and via computer simulations? There are no questions that address other alternatives, are not these as important as HREPs?

IV. Goal 4. Management of LTRMP information. ***"The objectives identified…establish a workable process to manage the data collected; and, most importantly, provide LTRMP participants access to the collected data."***

Congress required the implementation of a computerized inventory and analysis system in the LTRMP. The Program was to develop a system to support the management, distribution, analysis, and accessibility of the LTRMP data. In addition, federal data standards, archiving, and quality assurance regulations must be adhered to. This goal is heavily oriented toward technical assistance, proving for data base management, supporting the computer network, developing computing and electronic communications tools and supporting the seven cost centers.

Over the past 10 years LTRMP has opportunistically developed enhanced data serving and geospatial and decision support tools above and beyond the core LTRMP and federal data management and data serving requirements to allow for improved access to LTRMP data by the diverse members of the partnership. **Examples include: Fish Data Browser (http://www.umesc.usgs.gov/data_library/fisheries/graphical/fish_front.html); Spatial Data Query and Visualization Tool (http://www.umesc.usgs.gov/data_library/tools/spatial_query.html); Component Data Browsers (e.g. water: http://www.umesc.usgs.gov/data_library/water_quality/water_express_query.html) web-based serving of background maps and photography, as well as a variety of pilot efforts.**

IV – 1. Are such data sharing tool development efforts useful to your agency? Please explain which tools you use and how for (e.g. day to day management, regulatory purposes, etc.)?
Yes, such data sharing tool development efforts are useful to our agency. We have used and will continue to use all of the tools provided by LTRMP. The continued development of these tools is very important. Their value and use will continue to become more important as the resource managers become aware of their presence and utility. These tools will provide the valuable and necessary connection between the data set and the river managers.
These tools are used for many reasons; day-to-day management and regulatory purposes, permit review, on the spot fact seeking, data summaries, to determine the presence and abundance of invasive species; development of pool plans, duck blind management; habitat queries; to make inferences between trend pools and components; collect rare, threatened and endangered species; determine habitat preference of plants, animals and fish. These tools allow managers to be better informed on a day-to-day basis when the needs arise.

IV – 2. Is the effort to move beyond the federal and LTRMP requirements appropriate in a funding-limited environment?
We agree that the data sharing tools are useful to our agency and would like it to continue, but the minimum does not always equate to something that is useable. Only in the past few years have non-LTRMP data users been able to download information easily. In a funding-limited environment where baseline monitoring is the priority, the effort to move *well beyond* the federal and LTRMP requirements is nice but probably not necessary.
IV – 3. Would you enhance any of the existing products? What would you eliminate from other parts of the program to accomplish this change?
The existing products are excellent and would only require updating, not necessarily enhancing. We would suggest that the existing products and software is updated and supported at least at the field station level so they can provide managers the information they want or need. Web-based products that allow user-interface for specific questions have great utility if they are easy to operate, and would support the further development of them. LTRMP could provide training to states on use of their database and use of their data for specific purposes (e.g., Clean Water Act (Section 305(b)/303(d) reporting). We don't know what to eliminate because baseline monitoring and the field station structure are our priority.
IV – 4. Are there other data serving tools or data analyses that need to be developed?
Yes, there are countless tools that could and should be developed to keep up with technology if the funding is available.

V. Business Elements.

The LTRMP infrastructure was established early in the program. Seven cost centers now make up the infrastructure of the LTRMP. Each has varying degrees of flexibility in staffing, indirect costs, and access to extramural funds. Under a more fully implemented program (2002) fixed salary and infrastructure costs were about 83% of the budget. Today they run about 95% of the budget and this percentage of fixed costs is fairly consistent among the seven cost centers.

V – 1. What characteristics of the present infrastructure do you value or would you change?
We value the field station structure to collect and analyze the data and we value the existing multi-agency partnership. Without the partnership, the program will not be as strong.
It is important to consider that 95% of $2 million dollars is a lot more than 95% of $400,000. In a well-managed program, the amount of funding needed to collect information should be more than the amount of funding needed to serve and share in the analysis of the information. A possible review and change in the management structure of UMESC would address some of this issue. The majority of the LTRMP staff is dedicated and knowledgeable of the program and the River. Their collective knowledge is an extremely important part of the existing program. This program is unprecedented in how it brings together federal and state entities for one resource. We view this as a major strength of the program due to the diversity it brings to the program with respect to personnel expertise and viewpoints. However, this diversity has also created some conflict. A change that could be incorporated into the program to address the increasing fixed salary and infrastructure costs would be to implement cost indexing from Congress.
V – 2. If your agency manages one of the LTRMP cost centers do you have any agency business practices (i.e. Hiring practices, policies, facilities, or other business practices) that impact your flexibility in implementing elements of the LTRMP under the financial uncertainties that the program experiences as an annual appropriated federal program? If so, what are they?
Yes our agency has business practices that impact our flexibility for implementing elements of the LTRMP and they occur in the personnel area. Our employees are union covered and we cannot fire them nor do we have the ability to deny them the salary increases that are bargained for between the State of Iowa and the Union. A positive practice is that our agency's overhead rate is substantially lower that the other partners. Our agency also has the ability to hire temporary employees at lower wages and benefits than the other partners, especially the federal partners.
V – 3. Are there LTRMP business practices that cause you concern? What changes would you make regarding these concerns?
There are several business practices that cause us concern. It appears that LTRM program decisions are being made by fewer people with an increased disregard for input provided by the partnership. Valuable staff time is devoted to many meetings and partner input should be solicited and incorporated into the decision making process from the field station meetings up to the A-Team and EMPCC meetings.
The partnership is not provided detailed information on how the USGS or the COE spends their share of the LTRMP dollars. This creates a poor atmosphere of trust between the partners. All partners should be required to provide an itemized budget with personnel time allocations similar to what the states submit to USGS.

We feel it is very important that the field stations have the most updated software, computer equipment, sampling equipment available. This will help provide timely and accurate data collection and increase efficiency. This increased efficiency will improve relationships with all of the partners and users of the data in that they will get the information in a timely manner and perhaps an increase in products at the field station level.
Planning is taking up more and more valuable staff time. A reduction in alterative funding and sampling scenario creation would free up staff time for data analysis and report writing.
The use of four (or more) USGS administrators working on LTRMP seems excessive. A restructure of UMESC's management structure may be beneficial.

The last refreshment of computer equipment for all the cost centers occurred in 2000 and was a result of monies coming from USGS and not LTRMP. The current Scope of Work has no funds set aside for refreshment of equipment of any kind. All operating funds have been directed towards field sampling.
The first sentence points out the fact that USGS has supported LTRMP with base USGS monies. Many of the partners have contributed to the program with monies in addition to other in-kind services. Non-LTRMP programs at UMESC have unquestionably benefited from using LTRMP data, LTRM equipment, LTRM staff, or LTRM expertise.

V – 4. Are there consequences to your agency of not maintaining computer systems at field stations? If so, how do you propose to overcome these consequences?
Yes, there are consequences to our agency from not maintaining computer systems at the field stations. There is a need to maintain and upgrade the computer systems in order to keep up with technology and maintain productivity. Our agency does not have the $$ to maintain the computer systems and productivity will decline. The program needs to plan accordingly and should pay for the upgrades from within. One proposal is to allow the partners to acquire surplus equipment from UMESC and the COE as long as the equipment meets the technological needs of the program.
V – 5. As sampling equipment ages, breaks or falls out of safety compliance, how do you envision LTRMP provide for equipment refreshment under a limited funding outlook?
Better management of the program should provide for monies to maintain computer systems and sampling equipment. Under the current conditions equipment will be replaced or fixed only on an as need basis. It is upper management's responsibility to make sure that monies are budgeted for equipment refreshment when it is their guidance that does not allow the field stations to budget for equipment or computer systems.

VI. Your agency's vision of what should constitute LTRMP over the next five years.

Please provide us with your agency's perspective on what components and products are critical to the future program in light of your needs. Assume a static $5 million dollar budget over the next 5 years. How would you implement the goals and objectives set forth in the Operating Plan for LTRMP? Please list components and desired products in order of preference (See Tables 1- 4). Set forth an infrastructure model to meet your vision. Please provide justification for your responses.

- The Iowa Department of Natural Resources' vision is the maintenance of a program that puts monitoring, data collection and interpretation as the focus. Data of the type

collected over the past ten-years are invaluable and will remain valuable when the founders of the program are long forgotten.

- We highly value the field station structure to collect and analyze the data and we highly value the existing multi-agency partnership. This program is unprecedented in how it brings together federal and state entities for the collective good of one resource and is a major strength of the program.

- The system developed by UMESC to support the management, distribution, analysis, and accessibility of the LTRMP data is an important aspect of the program. It provides internal and external users timely access to information needed to better manage the river.

- Timely and complete analysis that goes beyond simple reporting of annual changes is needed to meet the goals and objectives of the program. FY03 has allowed the field stations to highlight their analysis capabilities. The field stations, in conjunction with the UMESC component principle investigators, can provide the timely and complete analysis.

- Our agency has great difficulty assuming that there is a long-term $5M cap or budget limitations. This program, and funding for this program, was not handed to the partnership on a platter, or out of the goodness of the "Congressional heart". Many have fought long and hard to get what many refer to as "the largest and most comprehensive large river environmental program on the planet!" We need to be proactive and continue to strive for the FY02 sampling level, with funding that would provide for inflation and other program necessities. Having said that, we know all of the program partners are faced with difficult funding scenarios and we must work through them together as a partnership.

- Possibly, a more effective and efficient management structure at UMESC would facilitate meeting the goals and objectives in the LTRMP operating plan with a declining budget. One administrator with decision-making capabilities, a computer programmer/database administrator and the component principle investigators is a starting point for restructuring LTRMP personnel at UMESC.

Please provide us with a list of the agencies/programs/departments within your organization that participated in the preparation of this response.
Iowa Department of Natural Resources, Fisheries Management Section
Iowa Department of Natural Resources, Fisheries Research Section
Iowa Department of Natural Resources, Wildlife Management Section
Iowa Department of Natural Resources, Aquatic Nuisance Species Program.
Iowa Department of Natural Resources, Environmental Services Division, TMDL & Water Quality Assessment Section.

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Callahan, Edward. 1998. Similarities between Upper Mississippi River pools included in the Long term Resource Monitoring Program (LTRMP). Report to the U.S. Geological Survey from Environmental Statistics. May 11, 1998. 13 pp. + Appendixes A-D.